

Affirmed[®] Mobile Content Cloud, Powered by VMware



Affirmed Networks' unique NFV architecture –the Affirmed Mobile Content Cloud™ significantly transforms and advances the state of mobile data networks with innovative features that far surpass incumbent vendor solutions.

Key Highlights

Challenge

To deliver a completely virtualized mobile core network solution that enables operators to launch services at Internet speeds and provide rich content delivery using a unified, centrally-managed, virtualization and cloud computing architecture.

Solution

The Affirmed Mobile Content Cloud is powered by the VMware® virtualization and cloud computing platform. For more information, go to www.affirmednetworks.com

Highlights

- Provides a unified, centrally managed virtualization and cloud architecture that delivers computing resources and infrastructure on demand.
- Hosts network virtualization functions on range of industry standard, high-volume servers, switches, and storage.
- Reduces the total cost of ownership (TCO) with significant savings from reduced hardware and infrastructure, and increased profitability.
- Increases the return on investment (ROI) due to operational efficiencies and increased flexibility through virtualization.
- As a foundation technology, VMware virtualization enables next gen solutions and network function virtualization.

Affirmed Networks™ Solution, Powered by VMware, Enables Flexible, Scalable, High Performance Core Network Virtualization

"Virtualization of the mobile network has arrived. The true potential of NFV will finally be realized as Affirmed Networks' products, using VMware® solutions, deliver powerful and stable virtualized mobile networks. We are pleased to enable this revolutionary shift as operators move toward virtualization and cloud infrastructure."

Hassan Ahmed, Chairman and CEO of Affirmed Networks

The Affirmed Networks™ Mobile Content Cloud™ (MCC) is a fully virtualized evolved packet core solution (vEPC). The MCC has collapsed and virtualized all functions from the radio through to the Gi Lan services. This would include 2G, 3G and 4G services. The MCC is an advanced, integrated Network Functions Virtualization (NFV) software solution that enables data plane and control plane processing using the VMware platform to automate provisioning & distribution. The Affirmed solution uses a unified, centrally-managed, virtualization and cloud computing architecture that delivers the advantages of a Software-Defined Data Center (SDDC). This solution is secure, highly flexible, scalable, high performance, and cost efficient. This success story describes the Affirmed Networks solution, powered by VMware, and the excellent results it has achieved.

Introduction

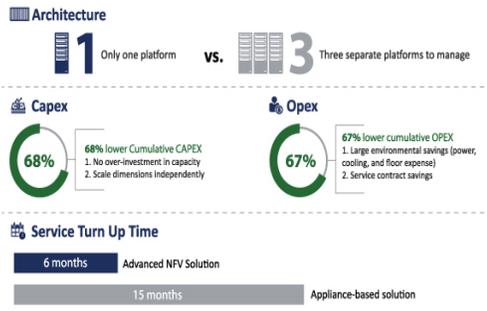
Affirmed Networks is the industry leader in virtualized mobile networks, as its Network Functions Virtualization (NFV) solution has become the standard for the world's top mobile operators, including AT&T who selected them as part of their Domain 2.0 program in 2014. With more than 25 customers and 40 trials underway with Tier 1 and Tier 2 operators globally, the company's Mobile Content Cloud is enabling operators to experience the technical and economic benefits of NFV.

Affirmed Mobile Content Cloud

While mobile broadband data is experiencing unprecedented, exponential growth, traditional approaches of just building bigger, monolithic, purpose-built servers or modified routers to handle mobile data traffic are grossly inadequate to support the transition from 3G to 4G LTE traffic. A recent

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The Time is Now for NFV. Immediate Cost Savings Creates Opportunity for Telcos



Virtualization Makes You Money



Figure: ACG Research TCO Report

PROFILE	
Industry	Global communications systems / services
Value Proposition	<ul style="list-style-type: none"> Disruptive technology for mobile operators Integrated Packet core with services Fully virtualized software architecture Powerful & Open Service Orchestration Hardware agnostic (HP, IBM, blade servers) Faster time to market

VMWARE AT WORK	
VMware vSphere / VMware ESXi	<ul style="list-style-type: none"> VMware vSphere[®] 5.5 Enterprise Edition[®] VMware ESXi[®] 5.5
VMware vCloud Suite	<ul style="list-style-type: none"> VMware vCloud[®] 5.5 Enterprise Edition[®]
VMware vCenter	<ul style="list-style-type: none"> VMware[®] vCenter Server[®] 5.5

report by ACG Research stated that the move to NFV by operators ensures CAPEX and OPEX savings of more than 67%. Operators have not only begun to realize the benefits of OPEX savings but also the fact that there is scope for generating additional amount of revenue with value added services.

The Affirmed Mobile Content Cloud was designed from the ground up using a Network Functions Virtualization architecture to transform 3G/4G LTE mobile data networks from legacy - access architectures to industry-leading, virtualization solutions that are independent of any proprietary platform.

The Affirmed Mobile Content Cloud enables virtualized data plane and control plane processing in Software-Defined Data Centers (SDDCs), using VMware's proven VMware vSphere[®] and VMware Suite infrastructure.

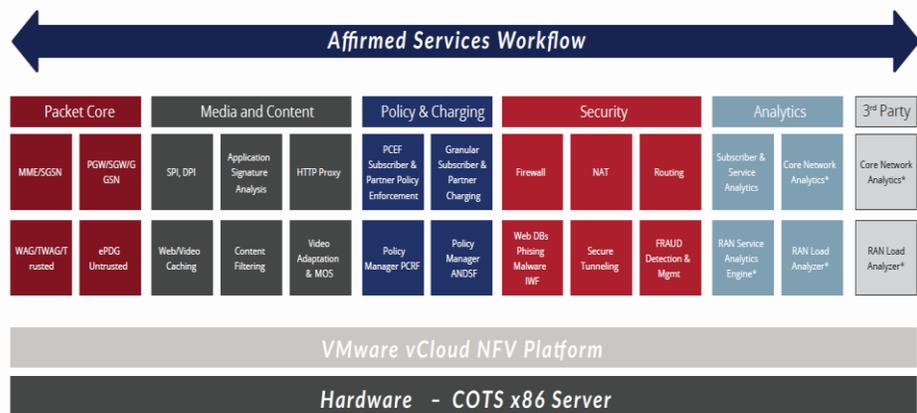


Figure: Affirmed Networks Mobile Content Cloud Architecture

Affirmed Networks' next-generation core network features, combined with VMware's inherent scale and capacity management capabilities, are anticipated to quickly lower mobile operators' capital (by 68%) and operational expenditures (by 67%), providing greater efficiency for deploying **revenue-generating services and applications**.

The Affirmed solution significantly transforms and advances the state of mobile data networks with value added services, high performance, excellent scalability, high resiliency, and content - delivery capabilities that far surpass incumbent vendor solutions. Affirmed Networks provides the mobile operator with a cost - effective solution deployed on industry standard hardware that can easily handle rapidly expanding data traffic with carrier-grade reliability and NFV-based service orchestration.

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Affirmed chose VMware®, a key partner, to power its high performance cloud architecture using VMware vSphere 5.5 virtualization and cloud computing platform, with the VMware® ESXi® 5.5 hypervisor. After extensive testing, Affirmed Networks also decided the VMware vCloud® Suite was a superb choice as a platform for NFV applications.

VMware vSphere increases the consolidation of physical servers, storage, and networking to industry standard, high volume servers. The VMware platform enables rapid integration, the rapid allocation of computing resources, rapid access to those resources on demand, and increased utilization. It facilitates operational efficiencies, including faster response times, immediate access to data center resources, extensive security, and simplified management.

Optimal, Flexible, and Elastic Cloud Architecture

The Affirmed Mobile Content Cloud is a flexible, scalable, carrier-class virtualized software architecture that provides multiple industry leading innovations, including the company's innovative Workflow Service Orchestration. The Affirmed Mobile Content Cloud can be economically deployed either in the mobile operator's data center or in a hosted cloud environment using best-in-class industry standard computing platforms.

The Affirmed solution enables a dynamic, flexible, and highly scalable environment. For example, this solution speeds the delivery of services and simplifies the deployment and update of applications. Telecom-scale cloud architectures deliver virtually unlimited computing resources. It decouples the one-to-one relationship between physical plane and network functions. The solution bundles core gateway functionality with rich applications and subscriber/content management functions. This dramatically shifts the operators' economics and enables them to deliver the services their customers demand at broadband-like speeds.

The Affirmed Dynamic Scaling feature interoperates with vCloud and addresses shifts in traffic flow by rapidly introducing and expanding new services. By implementing network functions in software, they can be moved or instantiated to various network locations, without requiring new equipment to be installed.

The Affirmed Mobile Content Cloud overcomes major challenges mobile operators face in economically scaling their networks to meet subscriber usage demands, as well as to intelligently treat multiple traffic streams, sometimes from the same subscriber, to appropriately ensure the best quality of experience (QoE).

The Affirmed solution enables services to be individualized, such as to create adaptable charging profiles for each tenant. It supersedes monolithic, discrete nodes for each service. It can be used to monetize the distribution of content to improve profitability, and form symbiotic and mutually collaborative relationships with content providers and advertisers.

It enables mobile operators to simultaneously meet today's data usage trends, provide for rapidly growing data usage, create advanced application services demanded by increasingly sophisticated users, and apply user-specific treatments to deliver the best quality of experience.

In addition, Affirmed has its own standout features that allow the company's technology to handle larger levels of traffic with scale in/scale out capabilities, and provision resources in a matter of seconds.

The Affirmed solution is integrated with VMware vCloud Suite, enabling network service providers to build secure, multi-tenant private clouds by pooling infrastructure resources into virtual data centers. vCloud Suite exposes these resources to users through web-based portals and programmatic interfaces as fully automated, catalog-based services. It provisions applications in minutes instead of weeks, and delivers the right availability and security for each application with policy-based governance.

Additionally, the Affirmed Mobile Content Cloud uses VMware infrastructure to enable virtual networking elements that are similar to those used in the physical environment, but with some advanced capabilities.

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The VMware vCloud infrastructure used with the Affirmed solution includes:

- **VMware vSphere® Enterprise Plus Edition™**: The core infrastructure layer for the Affirmed Mobile Content Cloud virtual machines.
- **VMware® vCloud® Director**: Used to deploy and scale clusters of Affirmed Networks virtual machines in a pre-connected configuration, for quick provisioning in cloud environments.
- **VMware® vCenter™ Operations Manager™**: Provides analytics, unified management and policy-based automation.

Moreover, Affirmed Networks uses VMware® vCenter Server® to provide for centralized monitoring, including aggregating all resident virtual machines and hosts. vCenter uses patented analytics and an integrated approach to dramatically simplify management tasks, such as to provide sufficient CPU and memory resources. vCenter proactively ensures health, efficiency, and compliance with IT policies.

Efficiency, High Performance, Dramatically Lower Costs

With a small investment, operators can realize tremendous CAPEX and OPEX savings using the Affirmed Networks and VMware vCloud Suite architectures. It is apparent that NFV is affecting the bottom line, given the cost efficiencies created by using industry standard, high volume servers, and purpose-built applications that are not dependent on proprietary hardware.

The Affirmed Mobile Content Cloud running on the VMware platform delivers superb 4G LTE network performance and carrier-grade reliability. It provides dynamic allocation of resources using an elastic, highly available cloud architecture, powered by VMware.